We claim:

1. A method to assess oxidative stress in vivo comprising:

(a) obtaining a fresh sample of lipid containing biological fluid;

(b) measuring the amount of noncyclooxygenase derived prostanoids in the sample prior to the ex vivo development of prostanoids in the sample;

(c) comparing said measured amount of prostanoids with a control; and

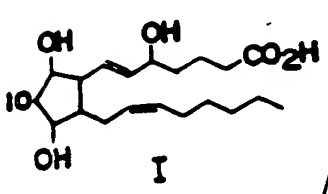
(d) assessing oxidative stress in vivo based on the comparison in step c.

2. The method of claim 1, wherein said biological fluid is selected from the group consisting of plasma, cerebrospinal fluid, bile, lung lavage fluid, lymph and ~~inflammatory~~ human joint fluid.

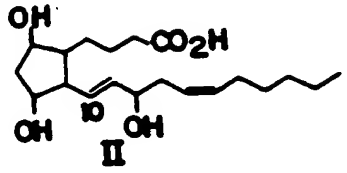
3. The method of claim 1, wherein said measurement occurs within about two hours of sampling.

Sub. B2

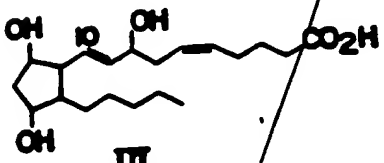
4. The method of claim 1, wherein said prostanoids are selected from the group consisting of:



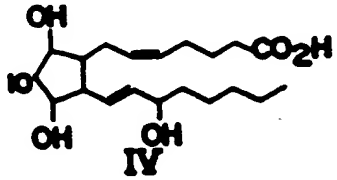
I



II

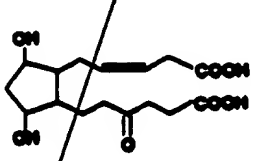


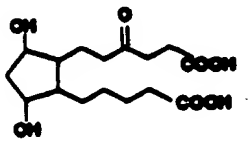
III

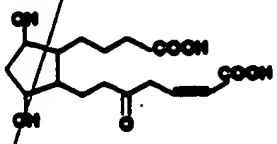


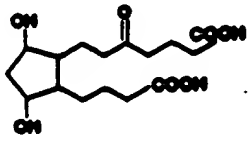
IV

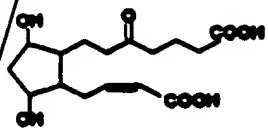
5. The method of claim 1, wherein said prostanoids are prostaglandin F_2-like metabolites selected from the group consisting of:











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6. A method to assess oxidative stress in vivo comprising:

(a) obtaining a fresh sample of urine;

(b) measuring the amount of noncyclooxygenase derived prostanoids in the sample;

(c) comparing said measured amount of prostanoid with a control; and

(d) assessing oxidative stress in vivo based on the comparison in step c.

7. A method to assess oxidative stress in vivo comprising:

(a) obtaining a fresh sample of tissue;

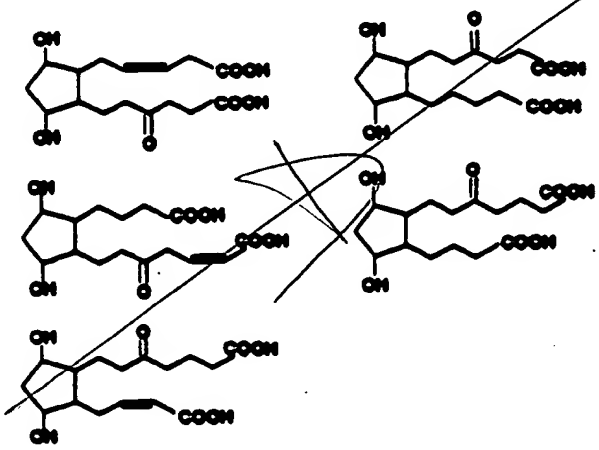
(b) measuring the amount of noncyclooxygenase derived prostanoids present in phospholipids in the sample;

(c) comparing said measured amount of said prostanoids with a control; and

(d) assessing the oxidative stress in vivo based on the comparison in step c.

~~8. The method of claim 7, wherein said measurement occurs within two hours of sampling.~~

9. A purified and isolated composition comprising the formula:



add B3